City of Ruston, Louisiana

Advanced Metering Infrastructure and Smart Grid Development Program

Abstract

The City of Ruston's Advanced Metering Infrastructure and Smart Grid project includes smart meters, distribution automation equipment, building energy management pilot programs, and an electric vehicle charging station demonstration pilot. The project is installing smart meters for all 10,125 customers served by the City of Ruston. The smart meter program enhances customer control of electricity costs, reduces customer costs, and improves peak-load conditions on the distribution system. New automation equipment is being installed for all circuits of the City of Ruston's distribution grid. The equipment automatically adjusts voltage levels and averts power disturbances. The City of Ruston expects to reduce electricity line losses, improve system reliability reduce operations and maintenance costs, and lower vehicle emissions.

Smart Grid Features

Communications infrastructure includes a wireless radio frequency network to support two-way communications between the City of Ruston's advanced metering infrastructure (AMI) system and its customers. A new meter data management system and customer information system collects and coordinates real-time consumption data from smart meters, enabling grid operators to more precisely monitor and operate the distribution system. The new customer information system provides a platform for presentation of real-time energy usage and costs to consumers, via advanced electric service options. The City of Ruston expects these new communication systems to support future advanced-pricing programs.

Advanced metering infrastructure includes smart meters for all 10,125 residential, commercial, and industrial customers in the City of Ruston's service territory. These meters collect customer consumption data in intervals of an hour or less, and remotely report this data in real-time to the new meter data management system. The meters provide capabilities for efficiently identifying outages and implementing advanced customer service options and future time-based rate programs.

Advanced electricity service options offered through the project include in-home displays, customer energy management systems, a

At-A-Glance

Recipient: City of Ruston, Louisiana

State: Louisiana

NERC Region: SERC Reliability Corporation

Total Budget: $9,168,000

Federal Share: $4,331,650

Project Type: Integrated and Crosscutting Systems

Equipment

- **10,125 mart Meters**
- **AMI Communication Systems**
  - **Meter Communications Network**
  - **Backhaul Communications**
- **Meter Data Management System**
- **Customer Web Portal**
- **In-Home Displays/Energy Management Systems**
- **Programmable Communicating Thermostats**
- **Distribution System Automation/Upgrade for 10 of 18 Circuits**
  - **Distribution Management Systems**
  - **Distribution Automation Communications Network**
  - **Automated Distribution Circuit Switches**
  - **Automated Capacitors**
  - **Automated Regulators**
  - **Circuit Monitors/Indicators**
- **1 Electric Vehicle Charging Station**

Key Targeted Benefits

- **Reduced Electricity Costs for Customers**
- **Deferred Investment in Distribution Capacity Expansion**
- **Reduced Costs from Equipment Failures, Distribution Line Losses, and Theft**
- **Reduced Congestion Costs**
- **Reduced Operating and Maintenance Costs**
- **Improved Electric Service Reliability and Power Quality**
- **Reduced Greenhouse Gas and Criteria Pollutant Emissions**
- **Reduced Truck Fleet Fuel Usage**

City of Ruston, LA *(continued)*

new Web portal and a pilot of building energy management automation software. In-home displays use the upgraded customer information system to present customers with real-time data from their smart meters. Customer energy management systems provide customers with centralized control of heating, air conditioning, and other appliances, enabling customers to control their consumption based on electric costs. A pilot program for building energy management automation software at city-owned buildings is being implemented. Various demand-side strategies are being designed, programmed, and tested during this city building pilot.

Distribution automation systems include new automated switches, re-closers, transformer monitors, and capacitor banks. This equipment coordinates sensor data throughout the distribution grid to automatically manage power quality, address power disturbances, and quickly isolate outages. The City of Ruston expects the automated equipment to provide improved power quality management, reduced distribution line losses, and deferred need for distribution capacity investments.

An electric vehicle charging station is deployed as a field test intended to evaluate the feasibility of electric vehicles and ultimately their ability to reduce gasoline use and mitigate air pollution in transportation. Metered data from the electric vehicle charging station provides hourly load data for analysis and planning potential charging station and vehicle additions.

Timeline

Key Milestones	Target Dates
AMI installation completion	Q1 2012
Distribution automation completion	Q3 2012
Electric vehicle pilot program completion	Q3 2012

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